

## REMARKS

Entry of the foregoing amendments is respectfully requested

### Summary of Amendments

Upon entry of the foregoing amendments, claims 44, 48, 56 and 62 are amended, whereby claims 44-76 continue to be pending, with claims 44 and 56 being independent claims.

Support for the amended claims can be found throughout the present specification (see, e.g., pages 4 and 17-19).

Applicants emphasize that the amendments to claims 44, 48, 56 and 62 are without prejudice or disclaimer, and Applicants expressly reserve the right to prosecute the amended claims in their original, unamended form in one or more continuation and/or divisional applications.

Applicants further note that entry of the instant amendments is proper because they do not raise any new issues and do not require a further search.

### Summary of Office Action

Claims 44-46, 49-51, 53-60, 63-66, 68-73, 75 and 76 are rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Mennig et al., U.S. Patent No. 6,162,498 (hereafter "MENNIG") in view of Hench et al., U.S. Patent No. 4,851,150 (hereafter "HENCH").

Claims 47, 48, 61 and 62 are rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over MENNIG in view of HENCH and further in view of the content from <http://web.archive.org/web/20020427181641/http://www.Mcgillairpressure.com/vac/textdocs/aboutus.html> (hereafter "McGILL").

Claims 52 and 67 are rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over MENNIG in view of HENCH and further in view of Chou et al., “Sol-Gel-Derived Hybrid Coatings for Corrosion Protection” in J. Sol-Gel Sci. and Tech. 26, pp. 321-327, 2003 (hereafter “CHOU”).

Claim 74 is rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over MENNIG in view of HENCH and further in view of Callister, Materials Science and Engineering: An Introduction, 5<sup>th</sup> ed. (c) 2000, John Wiley & Sons, Inc., pp. 169-171 (hereafter “CALLISTER”).

### **Response to Office Action**

Reconsideration and withdrawal of the rejections of record are respectfully requested, in view of the foregoing amendments and the following remarks.

#### ***Response to Rejections under 35 U.S.C. § 103(a) over MENNIG in View of HENCH***

Claims 44-46, 49-51, 53-60, 63-66, 68-73, 75 and 76 are rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over MENNIG in view of HENCH. The Examiner essentially takes the position that MENNIG teaches a process of the type recited in the rejected claims, which process comprises a two-stage thermal densification of a coating applied to a substrate. The rejection concedes that MENNIG “is silent as to specific conventional drying conditions”, wherefore MENNIG “does not explicitly teach wherein the drying process is conducted in an oxygen-containing environment”. In this regard, the rejection alleges that HENCH cures the noted deficiency of MENNIG by allegedly disclosing corresponding drying conditions.

Applicants respectfully traverse this rejection. In particular, it is pointed out that amended independent claims 44 and 56 submitted herewith make it clear that already the heat treatment of the coating in the first densification stage results in a partial densification of the coating (which is implied by the recitation of a further densification by the heat treatment of the second stage).

Additionally, amended claims 44 and 56 recite heating end temperatures for the first densification stage, i.e., (a) an end temperature of at least 350°C for heating in an oxygen-containing atmosphere and (b) an end temperature of at least about 120°C for heating in a vacuum at a residual pressure of  $\leq 15$  mbar. These temperatures are clearly not taught or suggested by MENNIG or HENCH for the drying operations mentioned therein.

For example, according to Example 4 of MENNIG the applied coating was predried for 10 minutes at room temperature and subsequently dried at 80° C. for 1 hour. Since it can safely be assumed that the drying took place in air, i.e., in an oxygen-containing atmosphere, these conditions must be compared with the partial densification at an end temperature of at least 350°C which is recited in the instant independent claims for a heat treatment in an oxygen-containing atmosphere. Clearly, MENNIG does not render it obvious to one of ordinary skill in the art to carry out a “drying” of the applied coating at an end temperature of at least 350°C.

Further, the drying process described in col. 4, lines 12-37 of HENCH is carried out (apparently in air) at a temperature between 70° to 150° C. for a fixed time varying from 18 to 96 hours (see also claim 1 (1) of HENCH). Example 1 of HENCH describes a drying process (evaporation) at 75° C. for a period of approximately 32 hours. Again, even the upper limit of the drying temperature of 150° C. mentioned in HENCH clearly fails to render it obvious to one of

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ordinary skill in the art to employ a “drying” end temperature of at least 350°C as it is recited in the instant independent claims for the first stage densification heat treatment in an oxygen-containing atmosphere.

Applicants submit that for at least all of the foregoing reasons and the additional reasons set forth in the response to the previous Office Action, MENNIG in view of HENCH is unable to render obvious the subject matter of any of the instant claims, wherefore withdrawal of the rejection under 35 U.S.C. § 103(a) over these documents is warranted and respectfully requested.

***Response to Remaining Rejections under 35 U.S.C. § 103(a)***

Claims 47, 48, 61 and 62 are rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over MENNIG in view of HENCH and further in view of MCGILL. Claims 52 and 67 are rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over MENNIG in view of HENCH and further in view of CHOU, and claim 74 is rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over MENNIG in view of HENCH and further in view of CALLISTER.

Applicants note that all of the above rejected claims are dependent claims and are not rendered obvious for at least all of the reasons which are set forth above with respect to the independent claims from which they depend. MCGILL, CHOU and CALLISTER clearly fail to cure the noted deficiencies of MENNIG and HENCH, wherefore Applicants refrain from specifically commenting on the allegations with respect to MCGILL, CHOU and CALLISTER which are set forth in the present Office Action, without admitting, however, that any of these allegations is meritorious.

**CONCLUSION**

In view of the foregoing, it is believed that all of the claims in this application are in condition for allowance, wherefore an early issuance of the Notices of Allowance and Allowability is respectfully solicited. If any issues yet remain which can be resolved by a telephone conference, the Examiner is respectfully invited to contact the undersigned at the telephone number below.

Respectfully submitted,  
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/Heribert F. Muensterer/  
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